



# VERSION 1 OVERVIEW

## MODIS Science Software Transfer Group (SSTG)

Jim Firestone/Fred Patt - MODIS SDST  
(Jim.Firestone@gsfc.nasa.gov, (301) 352-2111;  
Fred.Patt@gsfc.nasa.gov, (301) 352-2118)

Programmers' Forum

April 30, 1996



# Presentation Overview

- Beta Infusion Lessons Learned
- Goals/Requirements for V1
- V1 Schedules and Milestones
- Metadata and Ancillary Data
- Software Tools
- V1 Delivery Information
- Communications Resources
- Items on “TO DO” list



# Beta Infusion Lessons

- Standardization of makefile environment variables and compiler options would smooth integration at the DAAC.
- An automated tool for code checking at the TLCF is needed for locating functions prohibited (due to non-portability) by ESDIS standards.
- The PCF template provided with SDP TK6 must be followed (i.e. no lines with LUNs removed) to work properly at the DAAC.
- Absolute, rather than relative, pathnames should be used in PCFs, scripts, makefiles, “include” statements, etc.
- Prologs must follow ESDIS standards.



# Characteristics of V1 System

- Emphasis on code robustness, testing criteria (i.e. can we break the code).
- Emphasis on efficiency/code optimization.
- Tighter CM on file specs (CCB review for post-baseline changes) and datasets.
- Stricter, automated checks for adherence to all ESDIS and MODIS standards. Code aims to meet guidelines.
- Improved scientific content of simulated datasets.
- Increasing attention to processes: code acceptance, HDF spec iteration, code deliveries.



# V1 Coding Goals [G] and Requirements [R]

- REFERENCE: V1 Requirements Specification (SDST-028).
- Develop HDF product specs. with both core (ECS and MODIS) and product-specific metadata, QA flags if defined. [R]
- Develop selected products in the EOSDIS swath structure. [G]
- Produce products consistent with the science defined in the updated ATBDs. [R]
- Read ancillary data [R] in at-launch format [G], matching simulated data temporally [R].
- Develop and implement MODIS production rules. [R]
- Develop code which runs with SDP TK Ver. 6, and either M-API (Ver. 2.0) or HDF (Ver. 4.0). [R]



# V1 Coding Goals and Requirements, cont.

- Optimize code performance to reduce resource requirements. [G]
- Provide complete end-to-end integration, reflecting at-launch dependencies. [R]
- Use file LUNs and SMF message numbers in SDST-assigned ranges for each science discipline. Use precise file and run-time parameter LUN assignments (supplied by SDST) for ancillary data and upstream product outputs. [R]
- Use established naming conventions for PCF, makefile, executables, process script/list, and file specs. [R]
- Define requirements for V2 tools and utilities as early as possible. [G]
- Code flexible enough to handle possible increase in granule size. [G]



# V1 Delivery Requirements

- REFERENCE: V1 SCF Software Delivery Guide (SDST-066).
- HDF spec for output product, prior to initial code delivery as per schedule.
- Process-specific error message (seed) files, with initial delivery.
- Separate, single README and packing list files as ASCII text, with all required elements, with initial delivery.
- Bit-level file descriptions using SDST-supplied template, prior to final delivery.
- Input and output data sets used for significant tests performed at SCF, with initial delivery.



# ECS Granule Metadata Requirements

- ECS requires certain information to be provided in every archive product, in a specific format and syntax, for the purpose of creating the inventory of archive products in the ESDIS database.
- DID311 defines the mandatory granule metadata set for ECS products.
- Data producers have the option of adding fields to the inventory which are unique for their products, by following the same rules of format and syntax as for the mandatory metadata.





# MODIS V1 Implementation of ECS Metadata

- We have defined the proposed ECS granule metadata set for MODIS Version 1 products and distributed this information to the science teams.
- We have verified the basic functions of the metadata tools in the SDP Toolkit Version 5 (TK5).
- We have specified M-API modifications to support ECS granule metadata.
- Complete details of the proposed MODIS V1 ECS metadata implementation are contained in the distributed memorandum (Patt and Fisher).



# Software Tools and Utilities

- L1B readers: C and FORTRAN versions now reflect V1 L1B format.
- Scripts: executable lines of code counter, PR:QA standards checker.
- Misc. utilities: 1 km. aggregation, string parsing, system time retrieval.
- HDF tools: various NCSA and GSFC-provided file dump.
- MODIS API (M-API) HDF utilities:
  - Version 1.4 (available now):
    - Tables (Vdata) in FORTRAN, to read L1B metadata.
    - Standard naming for object names in mapi.h.
  - Version 2.0 (due summer 1996):
    - Vgroup support, to access EOSDIS swath structures.
    - Support for HDF 4.0.
    - ECS core metadata access, using SDP TK.
- Metadata I/O samples - in progress, to be posted to MODIS ftp site.
- Other SCF-developed tools - can be posted to MODIS ftp site.



# Information Resources

- MODIS Programmers' Web site:  
(<http://modarch.gsfc.nasa.gov/programmers>)
  - designed by SSTG/SDST, implemented by MAST.
  - links to SDST, ECS, and ESDIS documents and newsletters.
  - links to other SCFs.
  - links to info. on metadata, ancillary data, performance optimization.
  - links to MODIS ftp site including HDF product specifications.
  - YOUR SUGGESTIONS WELCOME !!
- MODIS Software News
  - 1st edition was Dec. 1995.
  - to be issued periodically as needed by SDST.
  - focuses on current events and milestones.
- MODIS-PROG listserv (mailing list for developers)
  - to subscribe: "SUBSCRIBE MODIS-PROG (your name)" to [listserv@listserv.gsfc.nasa.gov](mailto:listserv@listserv.gsfc.nasa.gov).



## Enhanced FTP Site (coming in 5/96)



- Anonymous ftp to [ltpftp.gsfc.nasa.gov/pub/projects/modis](ftp://ltpftp.gsfc.nasa.gov/pub/projects/modis).
- /data - simulated, ancillary, test datasets.
- /delivery - templates, LUN tables, utilities relating to code transfer.
- /documents - signed/baselined SDST documents.
- /filespec - baselined HDF and other file specs.
- /metadata - sample code for I/O; MCF template; dictionary.
- /modis\_api - M-API archive.
- /process - selected SDST processes and forms.
- /sample\_code - working examples for use in V1 code.
- /swlib - source code for misc. utilities developed by SDST.
- /tools - HDF tools, standards checker script, etc.



# V1 Monthly Progress During 1996 (Proposed)

- **April** - MODIS Programmer Forum; Baseline V1 SCF Software Delivery Guide.
- **May** - ST Meeting; all V1 file specs baselined; initial deliveries for nearly all L2, L2G code complete; SDP TK6 delivered.
- **June** - initial deliveries of remaining L2, nearly all L3/4 code complete; M-API 2.0 delivered.
- **July** - MODLAND meeting; Code acceptance continues.
- **August** - Last L1/2/2G code accepted into CM; Thread testing begins (L1/2/2G/3).
- **September** - Last L3/4 code accepted into CM; Thread testing begins (L4); Baseline V1 Processing Files Description document.
- **October** - Thread testing complete; System testing begins
- **November** - ST Meeting; System testing continues; M-API 3.0 delivered.
- **December** - V1 packaging for GSFC, EDC DAACs; Set up for infusion.



## SCF “TO DO” LIST (in priority order)

- Comment within a week on V1 process list and bubble charts.
- Review key documents: V1 SCF S/W Delivery Guide, Requirements Specification, S/W Development Standards and Guidelines.
- For deliveries: follow checklists in Delivery Guide and use templates on MODIS ftp site.
- Follow scheduled delivery date as closely as possible and notify SSTG of any changes.
- Install HDF 4.0 or M-API 1.4; (M-API 2.0), SDP TK6 when available.
- Retrieve ancillary data for 6/29-7/1 of 1994, to match simulated data.



# Programmer Forum Comments

- Please provide any comments or suggestions for SDST. You can also use this form to state requirements for test, simulated, and ancillary data, software utilities, SDP Toolkit routines, enhancements to MODIS API, etc.